

Nov 11th, 12:00 AM

# Protection against Hip Fracture: Clothing behaviors and Home Conditions of the Elderly

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Derafshi, Mercan Haddad and Ruppert-Stroescu, Mary, "Protection against Hip Fracture: Clothing behaviors and Home Conditions of the Elderly" (2015). *International Textile and Apparel Association (ITAA) Annual Conference Proceedings*. 4.

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## Protection against Hip Fracture: Clothing behaviors and Home Conditions of the Elderly

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Keywords: Age-in-place, hip protection, elderly females, clothing behaviors

According to Home Safety Council reports, between 1992 and 1999 approximately 18,000 deaths per year occurred due to unintentional home injuries. The leading causes of home injury deaths for all age groups and both genders were falls, accounting for 5,961 deaths each year. The number of fall deaths was substantially higher among those over 70 years of age compared to all other age groups. The cost of these falls in 2010 alone totaled over \$28.2 billion (Wiley, 2011). Hip fracture is one of the consequences of falls and it affects the ability to manage activities of daily living. It is known that hip protectors may reduce the risk of fracture and eliminate the risk of disability and death (Birks et al., 2004; Handoll, 2010). However, a general problem with compliance to wearing may be low comfort levels and inadequacies in design. Therefore, the purpose of this study was to explore clothing behaviors and home conditions of elderly females in relation to wearing a hip protector. The objective was to understand whether elderly females' clothing behaviors influence their acceptance and usage of a hip protector on a daily basis. In addition, by assessing home conditions we aimed to better understand day-to-day behaviors and to reveal risks for falls inside the home. The following research questions were assessed:

RQ1: What are elderly females' clothing behaviors?

RQ2: What are elderly females' home conditions?

Empirical research data was collected in the summer of 2013. The purposive sampling method was used to organize 8 focus groups of 10 to 13 participants each. Oklahoma Home and Community Education members were contacted by county educators through the University Extension system. Focus groups represented 8 different counties in four regions of the State of Oklahoma. Unstructured and open-ended questions gathered information about clothing behaviors, home conditions, and preferences toward hip protectors. Each focus group discussion took 60-75 minutes. IRB was obtained prior to the focus groups. A constant comparative method was employed during data collection and interviews were adjusted according to participant responses in relation to the research questions. Open coding and axial coding were employed, facilitated by the Nvivo10 TM software.

Several themes emerged: falls, fall patterns, donning and doffing, shoes, purchasing new clothes, and acceptance. Participants expressed concerns with regard to falls (Falls). Fall

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experiences were discussed. Sitting while donning and doffing was also brought up as a method to prevent losing balance and falling (Fall patterns). For the most, fastening a bra from the back was difficult (Donning and Doffing). Participants discussed wearing house shoes inside the home, and one participant expressed concerns about house shoes and knew that doctors recommended walking barefoot (Shoes). Their purchasing behaviors indicate that elderly females in this study prefer using their old clothes and were frugal (Purchasing new clothes). They also preferred that a supportive garment be an undergarment that was not visible while wearing it. Two participants stated that they would not wear a supportive garment when going to church (Acceptance). Comfort was the main focus for elderly females' clothing preferences. They mentioned wearing one type of clothing inside the home and changing when leaving the home. Participants mentioned they avoided tightly fitted clothes inside and outside the home due to rise in body temperature and difficulty in moving around the house and specially while bending down. The results indicate that all supportive and regular garments should be designed to easily don and doff while sitting, due to feeling dizzy and loss of balance. Participants were positive toward a supportive garment that felt soft to the skin, was snug fitting, and that would not restrict their mobility. Appearance and maintaining dignity were raised as reasons for not wearing current supportive garments.

All participant residences had steps either in the entrance and/or the basement. Participants were particularly concerned about stepping in and out of the bathtub. Lighting revealed to be sufficient and not a concern. A preference to age in place was continuously repeated; participants stated that they wanted to live in their homes as long as possible, even though homes contained elements that potentially would increase the risk of falling.

In conclusion, comfort and maintaining dignity could be significant contributing factors to low adherence rates for hip protector adoption.. Results suggest that hip protectors need to be redesigned based on the wearer needs and then evaluated in wear trials. The result of this study will provide a foundation for the design and development of a user-friendly hip protector that will reduce fall-related injuries and effectively facilitate aging in place with dignity.

### References:

- Birks, Y. F., Porthouse, J., Addie, C., Loughney, K., Saxon, L., Baverstock, M., . . . Torgerson, D. J. (2004). Randomized controlled trial of hip protectors among women living in the community. *Osteoporosis International*, 15(9), 701-706.
- Handoll, H. (2010). Hip protectors for preventing hip fractures in older people. *Injury prevention*.
- Wiley, D. (2011). Falls Among Older Adults: An Overview. Retrieved from <http://sfcp.cedwvu.org/training/falls-older-adults/Falls.Among.Older.Adults.pdf>